SOLLENBERGER SILOS CORP. Concrete, Site Cast, Circular, Waste Storage Structures

Designer: Stephen B. Clarke & Associates Ltd.
R.R. #2, Baden
Ontario, Canada (519) 634-8453

Fabricator: Sollenberger Silos
P.O. Box N
Chambersberg, PA 17201 (717) 264-9588

Drawings:
SSC-92-MT-1 General Specifications
SSC-92-MT-2 Typical Wall to Footing Details
SSC-92-MT-3 Floor Sump and Pipe Details
SSC-92-MT-4 Wall Opening Details
SSC-92-MT-5 6' Wall Reinforcing Schedule
SSC-92-MT-6 8' Wall Reinforcing Schedule
SSC-92-MT-7 12' Wall Reinforcing Schedule
SSC-92-MT-8 16' Wall Reinforcing Schedule
SSC-92-MT-9 Kicker Wall Schematics
SSC-92-MT-10 Equipment Access Bridge Slab
SSC-92-MT-11 Wall Reinforcing for Equipment Access Beside Wall

Location: Calculations and drawings have been reviewed by the NNTC and the PA state office for compliance with National Conservation Practice Std. 313-80. Design folders are on file at both reviewing locations. The reviews were completed in February 1993.

Materials: Reinforced concrete footings, floors, walls and access pads contain Class 4000 concrete and Grade 60 steel.

Sizes: 6', 8' & 12' walls with diam. from 30' through 140'
16' walls with diam. from 30' through 90'.
Walls 8" thick (9" thick alternate).

Application: National Conservation Practice Standard 313-80 for medium (20 yr.) service life.

Assumptions: The allowable soil bearing capacity for the footings is 1500 psi. Walls are designed according to PCA "Circular Concrete Tanks Without Prestressing" for a hinged base connection and tank full, no backfill condition. Walls are also adequate for full backfill, tank empty condition. Backfill is assumed to be uniform depth (+/- 2') around the perimeter of the tank. Minimum backfill of 4' is provided to assure frost protection of the footing. A drainage system behind the walls and under the floor with a pipe outlet is provided. Heavy equipment is not to be operated within 10' of the walls, except in areas specifically constructed with an access bridge or additional wall reinforcement for equipment access as shown on the drawings.

ence: The Head of the NNTC Engineering Staff concurs in the use of these detailed drawings.

SOLLENBERGER SILO Concrete, Site Cast, Round, Agw Tank

Replaced by SSC-92-MT
See bulletin PA216-3-4
6/14/93

Designers: Stephen B Clarke and Associates
Rd #2 Baden
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Fabricators: Sollenberger Silos
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(717) 265-9588

Drawings: C503-1A,1B Revision 3 dated 2-21-86 (specs)
C503-2 Revision 1 dated 8-10-85 (footing)
C503-3,4,5 Dated 4-85
C503-6,7,8 Dated 4-85
C503-9,10,11,12,13 Dated 6-85
C503-15 Revision 1 dated 2-21-86 (ramp)
C503-16 Dated 3-86 (sump pit)
(copy of typical title block attached)

Location: Plans have been reviewed in detail by NENTC for compliance with structural aspects of National Conservation Practice Standard 313-80. Design data is on file at the NENTC. Reviews of revision were completed in April 1986.

Material: The circular structure consists of site cast Class 4000 psi concrete with Grade 60 steel.

Sizes: Heights of 6, 8,12 ft and 30 thru 140 ft diameters.
Walls are 8in thick for all sizes.

Application: National Conservation Practice Standard 313-80 for short (10 yea

service life.

Assumptions: Footings are designed for an allowable soil bearing capacity of 3000 psf.

Walls are designed according to PCA "Circular Concrete Tanks Without Prestressing" for a hinged base connection and tank full no backfill condition. Walls are also adaquate for full backfill tank empty condition. Backfill is assumed to be uniform depth pl

or minus 2ft around the perimeter of the tank. Placement of the tank above the seasonal high water table is also assumed.

Concurrance: The Head of the NENTC Engineering Staff concurrs in the use of these detailed drawings.

April 8, 1986

Design Data Sheet for Standard Detail Drawing by:

Stoltzfus Concrete Construction, (SCC-NS-00) Circular, Site Cast Waste Storage Facility

Designer: Everett Prewitt, PE 816-421-4232
Norton & Schmidt, Consulting Engineers
Suite 419, 1100 Main Street, Kansas City, MO 64105

Fabricator: Stoltzfus Concrete Construction 717-423-6974
249 Shady Rd., Newburg, PA 17240

Drawings: SCC-NS-00 sheets 1 thru 12 (3 sets), dated 4-26-00 for 8, 10, & 14 foot walls. SCC-NS-00 sheets 1 thru 12, dated 4-06-00 & sheets 1 thru 8, dated 9-06-00 for 12 foot walls.

Location: Calculations and drawing were reviewed for conformance with PA Standard 313. Design data are on file in NRCS-PA state office. Review of latest revision was completed in May 2001.

Materials: Reinforced concrete footings, floor slabs, walls, and access pads require Grade 60 steel with Class 4000 air-entrained concrete.

Sizes: Diameters: 40 to 120 ft. in 20 ft. increments for 8, 10, 12, and 14 ft. walls.
130 ft. for 12 ft. walls.
Walls: 8 ft. high by 7.5 in. thick, 10 ft. high by 9.5 in. thick, 12 ft. high by 9.5 in. thick, 14 ft high by 9.5 in thick.

Applications: PA Standard 313 with equivalent fluid pressure of 60 pcf.

Assumptions: Minimum required soil bearing capacities are 1200 psf under floor slab and 1500 psf under the footing for 8 foot walls, 1500 psf under the footing and floor for 10 foot walls, 1500 psf under the floor and 2000 psf under the footing for 12 foot walls, and 2000 psf under the footing and floor for 14 foot walls. Backfill for frost protection is required. Design assumes a foundation drain as shown on drawings. Additional wall steel in lieu of access pad is designed for a vehicle surcharge of 15000 pounds. If larger equipment loads are anticipated near the wall, the alternate equipment access pad must be used. Height of backfill against the structure walls shall not vary more than 4 feet. Structure diameters between those shown may be used provided the reinforcing steel for the next larger diameter is used.

Concurrence: The State Conservation Engineer concurs in the use of these standard detail drawings.

Design Data Sheet for Standard Detail Drawing by:

Stoltzfus Concrete Construction, (SCC-NS-06L) Circular, Site Cast Waste Storage Facility

Designer: Everett Prewitt, PE — 816-737-0128
Norton & Schmidt, Consulting Engineers
311 East 11th Avenue, Kansas City, MO 64116

Fabricator: Stoltzfus Concrete Construction — 717-423-6974
249 Shady Road,
Newburg, PA 17240

Drawings: SCC-NS-06L sheets 1 thru 8, dated 10-10-06.

Location: Calculations and drawing were reviewed for conformance with PA Standard 313. Design data are on file in NRCS-PA state office. Review of latest revision was completed in October 2006.

Materials: Reinforced concrete footings, floor slabs, walls, and access pads require Grade 60 steel with Class 4000 air-entrained concrete.

Sizes: Diameter: 160 ft.
Walls: 16 ft. high by 11.5 in. thick.

Applications: PA Standard 313 with equivalent fluid pressure of 65 pcf.

Assumptions: Minimum required soil bearing capacity is 2,000 psf. Maximum backfill differential around the tank is 4 feet. Design assumes a foundation drain as shown on drawings. Additional wall steel in lieu of access pad is designed for a vehicle surcharge of 15,000 pounds. If larger equipment loads are anticipated near the wall, the alternate equipment access pad must be used.

Concurrence: The State Conservation Engineer concurs in the use of these standard detail drawings.

Design Data Sheet for Standard Detail Drawing by:

Stoltzfus Concrete Construction, (SCC-NS-02) Circular, Site Cast Waste Storage Facility

Designer: Everett Prewitt, PE 816-421-4232
Norton & Schmidt, Consulting Engineers
Suite 419, 1100 Main Street, Kansas City, MO 64105

Fabricator: Stoltzfus Concrete Construction 717-423-6974
249 Shady Rd., Newburg, PA 17240

Drawings: SCC-NS-02 sheets 1 thru 9, dated 9-14-02 for 12 foot walls with an optional 2 foot kicker wall.

Location: Calculations and drawing were reviewed for conformance with PA Standard 313. Design data are on file in NRCS-PA state office. Review was completed in November 2002.

Materials: Reinforced concrete footings, floor slabs, walls, and access pads require Grade 60 steel with Class 4000 air-entrained concrete.

Sizes: Diameters: 140 ft.
Walls: 12 ft. high by 9.5 in. thick, and up to 14 ft. high by 9.5 in. thick in kicker wall section which is limited to 50% of the tank circumference.

Applications: PA Standard 313 with equivalent fluid pressure of 60 pcf.

Assumptions: Minimum required soil bearing capacities are 1500 psf under floor slab and 2000 psf under the footing. Backfill for frost protection is required. Design assumes a foundation drain as shown on drawings. Additional wall steel in lieu of access pad is designed for a vehicle surcharge of 15000 pounds. If larger equipment loads are anticipated near the wall, the alternate equipment access pad must be used. Height of backfill against the structure walls shall not vary more than 4 feet.

Concurrence: The State Conservation Engineer concurs in the use of these standard detail drawings.

Design Data Sheet for Standard Detail Drawing by:

Stoltzfus Concrete Construction, (SCC-NS-06) Circular, Site Cast Waste Storage Facility

Designer: Everett Prewitt, PE 816-737--128
Norton & Schmidt, Consulting Engineers
Suite 419, 1100 Main Street, Kansas City, MO 64105

Fabricator: Stoltzfus Concrete Construction 717-423-6974
249 Shady Rd., Newburg, PA 17240

Drawings: SCC-NS-06 sheets 1 thru 10, dated 3-30-06.

Location: Calculations and drawing were reviewed for conformance with PA Standard 313. Design data are on file in NRCS-PA state office. Review of latest revision was completed in April 2006.

Materials: Reinforced concrete footings, floor slabs, walls, and access pads require Grade 60 steel with Class 4000 air-entrained concrete.

Sizes: Diameters: 100 to 120 ft. in 10 ft. increments for 16 ft. walls.
Walls: 16 ft. high by 9.5 in. thick.

Applications: PA Standard 313 with equivalent fluid pressure of 65 pcf.

Assumptions: Minimum required soil bearing capacities are 1800 psf under floor slab and 2000 psf under the footing. Backfill for frost protection is required. Design assumes a foundation drain as shown on drawings. Additional wall steel in lieu of access pad is designed for a vehicle surcharge of 15000 pounds. If larger equipment loads are anticipated near the wall, the alternate equipment access pad must be used. Height of backfill against the structure walls shall not vary more than 4 feet. Structure diameters between those shown may be used provided the reinforcing steel for the next larger diameter is used.

Concurrence: The State Conservation Engineer concurs in the use of these standard detail drawings.

Design Data Sheet for Standard Detail Drawing by:

Stoltzfus Concrete Construction, (SCC-NS-06U) Circular, Site Cast Waste Storage Facility

Designer: Everett Prewitt, PE 816-737--0128
Norton & Schmidt, Consulting Engineers
Suite 419, 1100 Main Street, Kansas City, MO 64105

Fabricator: Stoltzfus Concrete Construction 717-423-6974
249 Shady Rd., Newburg, PA 17240

Drawings: SCC-NS-06U sheets 1 thru 8, dated 5-22-06 and 6-30-06.

Location: Calculations and drawing were reviewed for conformance with PA Standard 313. Design data are on file in NRCS-PA state office. Review of latest revision was completed in July 2006.

Materials: Reinforced concrete footings, floor slabs, walls, and access pads require Grade 60 steel with Class 4000 air-entrained concrete.

Sizes: Diameter: 90 ft.
Walls: 16 ft. high by 9.5 in. thick.

Applications: PA Standard 313 with equivalent fluid pressure of 65 pcf.

Assumptions: Minimum required soil bearing capacities are 1800 psf under floor slab and 2000 psf under the footing. Backfill 4 feet above the bottom of the footing is required. Maximum backfill differential around the tank is 13 feet. Design assumes a foundation drain as shown on drawings. Additional wall steel in lieu of access pad is designed for a vehicle surcharge of 15000 pounds. If larger equipment loads are anticipated near the wall, the alternate equipment access pad must be used.

Concurrence: The State Conservation Engineer concurs in the use of these standard detail drawings.

Design Data Sheet for Standard Detail Drawing by:

Stoltzfus Concrete Construction, (SCC-NS-06A) Circular, Site Cast Waste Storage Facility

Designer: Everett Prewitt, PE 816-737--0128
Norton & Schmidt, Consulting Engineers
Suite 419, 1100 Main Street, Kansas City, MO 64105

Fabricator: Stoltzfus Concrete Construction 717-423-6974
249 Shady Rd., Newburg, PA 17240

Drawings: SCC-NS-06A sheets 1 thru 9, dated 5-10-06.

Location: Calculations and drawing were reviewed for conformance with PA Standard 313. Design data are on file in NRCS-PA state office. Review of latest revision was completed in May 2006.

Materials: Reinforced concrete footings, floor slabs, walls, and access pads require Grade 60 steel with Class 4000 air-entrained concrete.

Sizes: Diameters: 60 and 80 ft.
Walls: 16 ft. high by 9.5 in. thick.

Applications: PA Standard 313 with equivalent fluid pressure of 65 pcf.

Assumptions: Minimum required soil bearing capacities are 1800 psf under floor slab and 2000 psf under the footing. Backfill for frost protection is required. Design assumes a foundation drain as shown on drawings. Additional wall steel in lieu of access pad is designed for a vehicle surcharge of 15000 pounds. If larger equipment loads are anticipated near the wall, the alternate equipment access pad must be used. Height of backfill against the structure walls shall not vary more than 4 feet. Structure diameters between those shown may be used provided the reinforcing steel for the next larger diameter is used.

Concurrence: The State Conservation Engineer concurs in the use of these standard detail drawings.

STOR-LIX Circular, Glass-Lined Steel, Waste Storage Structures

Designers and Fabricators:	Long Manufacturing N. C., Inc. P.O. Box 1139 1907 North Main Street Tarboro, North Carolina 27886
Drawings:	Owners Manual, Form No. 756187, Rev. 3-84
Design:	Dated 10-10-83 Revised 2-24-84
Location:	Plans have been reviewed in detail by MNTC for compliance with structural aspects of National Conservation Practice Standard 313-80. Revised design folders are on file at the NNTC and MNTC. Reviews were completed in March, 1984.
Material:	The circular tanks are made from glass-lined ASTM A607 Grade 50 steel sheets and ASTM A36 steel shapes. The ring footing and slab are site cast Class 3000 concrete with Grade 60 reinforcing steel.
Sizes:	15, 20, 25 ft. high and 35, 47, 58, 70, 82, 105 ft. diameters.
Application:	National Conservation Practice Standard 313-80 for medium (20 year) service life.
Assumptions:	Footings are designed for an allowable soil bearing of 2000 psf. tanks are designed for a minimum allowable wind velocity of 80 mph which is adequate for all areas in the Northeast except the eastern coastal areas of Virginia and Massachusetts according to ASAE S388.3.
Concurrence:	The Head of the NNTC Engineering Staff concurs in the use of this detail drawing.

Waggoner Circular, Site Cast Concrete Waste Storage Structure

Designer: Michael A. Dixon, PE 717-795-8324
21 White Oak Blvd., Mechanicsburg, PA 17050

Fabricator: Byron Waggoner 717-432-8403
135 Bentz Mill Rd., East Berlin, PA 17316

Drawings: 12D BW-1, Sh. 1 storage Pit Plans
12D BW-1, Sh. 2 Typ. Sec. "A" & Elev. "B"
12D BW-1, Sh. 3 Details "C" thru "F"
12D BW-1, Sh. 4 Push-off Sec. "G" & Elev. "H"
12D BW-1, Sh. 5 Details "I" & "J"
12D BW-1, Sh. 6 Wall Reinf. Sch. & Notes

Location: Calculations and drawing have been reviewed by the NNTC and the PA state office for compliance with National Conservation Practice Standard 313. Design folders are on file at both reviewing locations. Reviews were completed in June 1995.

Materials: All site cast concrete is Class 4000. All reinforcing steel is Grade 60.

Sizes: Diameters are 60 & 90 ft. with 12 ft. height.

Applications: National Conservation Practice Standard 313 for short (10 year) service life.

Assumptions: Walls are designed according to PCA "Circular Concrete Tanks Without Prestressing" for a hinged base connection and tank full, no backfill condition. Walls are also adequate for full backfill, tank empty condition. Backfill is assumed to be of uniform depth +/-2' around the perimeter of the tank. Min. backfill of 4' is provided to assure frost protection of the footing. A drainage system behind the walls and under the floor with a pipe outlet is provided. No heavy equipment operation is permitted within 5 feet of the walls except on push-off slab. Equipment surcharge on the push-off slab is 100 p.s.f.

Concurrence: The Head of the NNTC Engineering Staff concurs in the use of these detail drawings.

Note: This sheet was re-typed to update the addresses of the designer and fabricator. The rest of the sheet is identical to the original.

WAGGONER CIRCULAR, SITE CAST CONCRETE
WASTE STORAGE STRUCTURE

717-795-8324

Designers: M. A. Dixon, Jr., P.E. 43710-E
~~2109 Cedar Run Drive, Apt. 104~~ ~~No forwarding address 6/9/97~~
~~Camp Hill, PA 17011~~ 21 White Oak Blvd., Mbrsl, PA 17050 (July 04)

Fabricators: Byron Waggoner
~~5271 Nursery Road~~
~~Dover, PA 17315~~ 135 Bath Mill Rd
East Berlin, PA 17316

Mr. Byron Waggoner
717-432-4403

Drawings:
12D BW-1, Sh. 1 Storage Pit Plans
12D BW-1, Sh. 2 Typ. Sec. "A" & Elev. "B"
12D BW-1, Sh. 3 Details "C" thru "F"
12D BW-1, Sh. 4 Push-off Sec. "G" & Elev. "H"
12D BW-1, Sh. 5 Details "I" & "J"
12D BW-1, Sh. 6 Wall Reinf. Sch. & Notes

Location: Calculations and drawings have been reviewed by the NNTC and the PA state office for compliance with National Conservation Practice Standard 313. Design folders are on file at both reviewing locations. Reviews were completed in June 1995.

Materials: All site case concrete is Class 4000. All reinforcing steel is Grade 60.

Sizes: Diameters are 60 & 90 ft. with 12 ft. height.

Application: National Conservation Practice Standard 313 for short (10 year) service life.

Assumptions: Walls are designed according to PCA "Circular Concrete Tanks Without Prestressing" for a hinged base connection and tank full, no backfill condition. Walls are also adequate for full backfill, tank empty condition. Backfill is assumed to be of uniform depth +/-2' around the perimeter of the tank. Min. backfill of 4' is provided to assure frost protection of the footing. A drainage system behind the walls and under the floor with a pipe outlet is provided. No heavy equipment operation is permitted within 5 feet of the walls except on push-off slab. Equipment surcharge on the push-off slab is 100 p.s.f.

Concurrence: The Head of the NNTC Engineering Staff concurs in the use of these detail drawings.

Sept 1995 letter says 30-90

WIESER L-PANEL MANURE STORAGE SYSTEM
PRECAST REINFORCED CONCRETE L-PANELS

Designer: Gordon Riegstad, P.E. - Wisconsin
Riegstad & Associates
St. Paul, Minnesota

Owner and Fabricator: Wieser Concrete Products, Inc.
Rt. 2 (Hwy 10) Box 148
Maiden Rock, WI 54750 (715) 647-2311

Drawings: Nine (9) drawing sheets, dated June 27, 1994 (revised Nov. 1, 1994).
Titled - "L-Panel Manure Storage System"

Sizes: Precase concrete L-panels, 8'-6" high, and either 7'-6" or 5'-1" wide, bolted together on floor slab for in-ground open-pit manure storage. 4'-6" minimum backfill is required. Plan pit dimensions are in 2'-6" increments each way, with 20' minimum dimension each way.

Location: Design notes and plans have been reviewed by MNTC for compliance with the structural aspects of Practice Standard 313-80. Design folders are on file at MNTC.

Materials: The L-panels are precast concrete panels with Class 5000 concrete and Grade 60 steel. The concrete floor slab is Class 3500 concrete.

Assumptions: The L-panels are designed for a soil backfill equivalent fluid pressure of 50 psf with stored liquid manure pressure of 60 psf. Installations with remain above seasonal high water table.

Application: SCS National Conservation Practice Standard 313 "Waste Storage Structure" for Medium (20-year) service life.

Concurrence: The Head of the Midwest NTC Engineering Staff concurs in the use of these detail drawings.

WIESER'S LIQUID MANURE PIT
DRIVE THRU AND FREE STALL CONCRETE PANELS

Designer:	Michael Malson, P.E. - Michigan The Consulting Engineers Group, Inc. Mt. Prospect, IL
Owner and Fabricator:	Wieser Concrete Products, Inc. RT. 2 (Hy 10) Box 148 Maiden Rock, WI 54750 (715) 647-2311
Drawings:	Three Drawing Sheets; Drawing No. 1, revised 12/9/93, Titled - Wieser's Liquid Manure Pit, General Notes & Index. Drawing No. 10A, dated 12/9/93, Titled - Drive Thru Panel. Drawing No. 10B, dated 12/9/93, Titled - Free Stall Panel.
Sizes:	Solid cover panels for rectangular tank. Panels are both 12 feet long, the Drive Thru panel is 8 feet wide and the Free Stall panel is 7 feet 4 inches wide. These panels would be used where a free stall dairy barn is constructed on top of a Wieser's Liquid Manure Pit.
Location:	Design notes and plans have been reviewed by MNTC for compliance with the structural aspects of Practice Standard 313-80. Design folders are on file at MNTC.
Materials:	The cover panels are precast concrete panels with Class 5000 concrete and Grade 60 steel.
Assumptions:	The cover panels are designed for a live load of 150 psf. The Drive Thru panel is also designed to support 12000 pound wheel or axial load with a 30 psf distributed load.
Application:	SCS National Conservation Practice Standard 313 "Waste Storage Structure" for Medium (20 year) service life.
Concurrence:	The Head of the Midwest NTC Engineering Staff concurs in the use of these detail drawings.